# R.M.K. ENGINEERING COLLEGE

**(An Autonomous Institution)**

**RSM Nagar, Kavaraipettai – 601 206**

## Department of Civil Engineering

## Course Outcomes - ODD Semester 2024-25

| Sl. No. | Semester | Theory / Practical | Course Code / Course Name |
|---|---|---|---|
| 1 | 3 | Theory | 22MA303- Fourier Analysis and Partial Differential Equations |
| 2 | 3 | Theory | 22CE301-Mechanics of Materials (Lab Integrated) |
| 3 | 3 | Theory | 22CE302-Fluid Mechanics (Lab Integrated) |
| 4 | 3 | Theory | 22CE303- Concrete Technology and Construction Practices (Lab Integrated) |
| 5 | 3 | Theory | 22CE304- Engineering Surveying (Lab Integrated) |
| 6 | 3 | Practical | 22CE311- Computer aided Building drawing |
| 7 | 3 | Practical | 22ME311- Product Development Lab-3 |
| 8 | 3 | EEC | 22CS311- Aptitude and Coding Skills - I |
| 9 | 5 | Theory | 22CE501-Basic Reinforced Concrete Design (Lab Integrated) |
| 10 | 5 | Theory | 22CE502-Structural Analysis (Lab Integrated) |
| 11 | 5 | Theory | 22CE503-Foundation Engineering (Lab Integrated) |
| 12 | 5 | Theory | 22CE911-Irrigation Engineering |
| 13 | 5 | Theory | 22CE922-Highway and Pavement Engineering |
| 14 | 5 | Theory | 22ME006-Testing of Materials |
| 15 | 5 | EEC | 22CS511-Advance Aptitude and Coding Skills - I |
| 16 | 5 | EEC | 22CE511-Internship |
| 17 | 5 | Theory | 20CE701- Estimation, Costing and Valuation Engineering |
| 18 | 7 | Theory | 20CE912- Prefabricated Structures (Professional Elective) |
| 19 | 7 | Theory | 20ME001- Introduction to Nanotechnology (Open Elective) |
| 20 | 7 | Practical | 20CE711- Computer Aided Analysis, Design and Drafting Laboratory (CADD) |
| 21 | 7 | EEC | 20CE712- Data Analysis and Programming Laboratory |
| 22 | 7 | EEC | 20CE713- Summer Internship |

## Third Semester B.E.

### 22MA303- Fourier Analysis and Partial Differential Equations

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Find the Fourier series of periodic functions. |
| CO2 | Compute the Fourier transform of prescribed functions. |
| CO3 | Solve first order partial differential equations. |
| CO4 | Determine the solutions of higher order partial differential equations. |
| CO5 | Apply the concept of Fourier series to solve heat and wave equations. |

### 22CE301-Mechanics of Materials (Lab Integrated)

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Determine the stresses, and strains in prismatic and composite bars under axial and thermal loads, and compute the principal stresses and principal planes |
| CO2 | Determine Shear force, bending moment and bending stress distribution across various sections of beams based on theory of simple bending. |
| CO3 | Analyze flexural members for shear stress distribution across various sections. |
| CO4 | Determine slope and deflection of determinate beams using different methods. |
| CO5 | Apply theory of torsion in design of circular shafts and helical springs. |
| CO6 | Analyze pin jointed plane and space trusses using different methods. |

### 22CE302-Fluid Mechanics (Lab Integrated)

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Demonstrate the difference between solid and fluid, its properties and behavior in static conditions. |
| CO2 | Apply the conservation laws applicable to fluids through fluid kinematics and dynamics. |
| CO3 | Relate the parameters involved in the given fluid phenomenon and predict the performances of prototype by model studies. |
| CO4 | Estimate losses in pipelines for both laminar and turbulent conditions. |
| CO5 | Analyze flow through pipes connected in series and in parallel. |
| CO6 | Explain the concept of boundary layer and its application, separation of boundary layer and its control. |

**22CE303- Concrete Technology and Construction Practices (Lab Integrated)**

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Describe the requirements of cement, aggregates and water for making concrete. |
| CO2 | Summarize the effect of admixtures on properties of concrete. |
| CO3 | Apply the concept of mix proportioning using different mix design methods. |
| CO4 | Classify the properties of concrete at fresh and hardened state. |
| CO5 | Outline the various practices and activities involved in construction works. |
| CO6 | Identify the different methods and techniques used in substructure and super structures construction. |

**22CE304- Engineering Surveying (Lab Integrated)**

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Summarize the procedure for measuring distance, horizontal angle and vertical angles using conventional and modern surveying instruments |
| CO2 | Apply the principle of levelling to compute orthometric heights relative to a vertical datum with different instruments. |
| CO3 | Illustrate the methods of setting out curves for engineering projects. |
| CO4 | Identify solutions for adjustments of erroneous measurements of a survey network. |
| CO5 | Describe the methods of sounding techniques conducted during hydrographic surveys. |
| CO6 | Determine the absolute position of any object on the earth's surface to various celestial bodies. |

## Laboratory

**22CE311- Computer aided Building drawing**

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Plan a building according to the requirements of National Building Code. |
| CO2 | Prepare the layout and sectional views of a building manually. |
| CO3 | Familiarize in the usage of AUTOCAD commands to generate different views. |
| CO4 | Draft the plan, elevation and sectional views of the given structure using AUTOCAD. |
| CO5 | Utilize the knowledge on the usage of modern tools. |
| CO6 | Develop technical communication skill in the form of communicative drawing. |

| 22ME311- Product Development Lab-3 | |
|---|---|
| **COs** | **Course Outcome: The students, after the completion of the course, are expected to ….** |
| **CO1** | Enhance their skills in design concepts, rules and procedures. |
| **CO2** | Develop their cognitive strategy to think, organize, learn and behave. |
| **CO3** | Demonstrate the ability to provide conceptual design strategies for a product. |
| **CO4** | Describe the procedure for designing a Mock-up model. |
| **CO5** | Recognize and apply appropriate interdisciplinary and integrative strategies |

## 22CS311- Aptitude and Coding Skills - I

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| **CO1** | Develop vocabulary for effective communication and reading skills. |
| **CO2** | Build the logical reasoning and quantitative skills. |
| **CO3** | Develop error correction and debugging skills in programming. |

## Fifth Semester B.E

| 22CE501-Basic Reinforced Concrete Design (Lab Integrated) | |
|---|---|
| **COs** | **Course Outcome: The students, after the completion of the course, are expected to ….** |
| **CO1** | Apply the principles and methodologies of reinforced concrete design, following codal provisions and best practices in structural engineering. |
| **CO2** | Apply knowledge of stress-strain behavior of concrete and steel, as well as various design philosophies in the analysis and design of structural elements. |
| **CO3** | Demonstrate proficiency in designing key structural components including slabs, beams, columns, and foundations, compliance with IS 456:2000 and SP 16. |
| **CO4** | Utilize STAAD Pro software to perform structural analysis and design, enhancing accuracy and efficiency in the analysis and design of various structural elements under different loading conditions. |
| **CO5** | Compare software-generated designs with manual calculations to evaluate the accuracy of both approaches. |
| **CO6** | Communicate effectively through technical reports and presentations and demonstrating compliance with industry standards and regulations. |

| 22CE502-Structural Analysis (Lab Integrated) | |
|---|---|
| **COs** | **Course Outcome: The students, after the completion of the course, are expected to ….** |
| **CO1** | Apply the principles of mathematics and engineering sciences to analyze structural elements. |
| **CO2** | Analyse indeterminate beams, frames and trusses to determine the internal stresses using conventional and modern methods. |
| **CO3** | Plot the shear force and bending moment diagram of indeterminate beams and rigid frames. |
| **CO4** | Validate the manually calculated SF and BM using software. |
| **CO5** | Analyse multi storied 3-D frames using STAAD Pro software. |
| **CO6** | Communicate effectively through technical reports and presentations, as an individual or as a team imbibing ethical principles. |

| 22CE503-Foundation Engineering (Lab Integrated) | |
|---|---|
| **Cos** | **Course Outcome: The students, after the completion of the course, are expected to ….** |
| **CO1** | Identify suitable soil exploration technique and footing design for any construction by applying the fundamentals of mathematics, science and engineering. |
| **CO2** | Analyze the factors influencing bearing capacity and settlement criteria for foundation design |
| **CO3** | Decide proportioning of shallow foundation under different soil conditions. |
| **CO4** | Determine load carrying capacity and settlement of pile foundation under various soil conditions |
| **CO5** | Calculate earth pressure for granular and cohesive soils and carryout stability analysis on retaining walls. |
| **CO6** | Determine the shear strength behavior of soils using modern engineering tools. |

| 22CE911-Irrigation Engineering | |
|---|---|
| **Cos** | **Course Outcome: The students, after the completion of the course, are expected to ….** |
| **CO1** | Demonstrate the importance of knowledge and skills of various irrigation practices |
| **CO2** | Explain the concepts of irrigation methods and management. |
| **CO3** | Design the components of gravity dam and diversion head works |
| **CO4** | Discuss the concepts of Kennady's and Lacey's regime theory in irrigation. |
| **CO5** | Apply the concept of water user association and participatory irrigation management. |
| **CO6** | Evaluate an irrigation system to provide water at the right time and right place |

| 22CE922-Highway and Pavement Engineering | |
|---|---|
| **COs** | **Course Outcome: The students, after the completion of the course, are expected to ….** |
| **CO1** | Examine the historical evolution of road infrastructure to comprehend the progression of highway planning and alignment strategies. |
| **CO2** | Assess the factors that impact decisions on highway project preparation and proficiently utilize engineering surveys in the initial phases of highway planning. |
| **CO3** | Design efficient highway cross-sections by applying geometric design principles to meet traffic requirements. |
| **CO4** | Design the flexible and rigid pavements by IRC standards. |
| **CO5** | Evaluate pavement materials and construction techniques to construct durable and environmentally friendly pavements for various traffic conditions |
| **CO6** | Analyze pavement defects and performance indicators to apply appropriate maintenance strategies and pavement strengthening techniques. |

| 22ME006-Testing of Materials | |
|---|---|
| **COs** | **Course Outcome: The students, after the completion of the course, are expected to ….** |
| **CO1** | Identify suitable testing technique to inspect any industrial component. |
| **CO2** | Practice the different mechanical testing techniques and know its applications and limitations |
| **CO3** | Practice the different non-destructive testing techniques and know its applications and limitations |
| **CO4** | Practice the different material characterization techniques and know its applications and limitations |
| **CO5** | Practice the different Thermal Testing techniques and know its applications and Limitations |
| **CO6** | Identify suitable testing technique to inspect any industrial component. |

## Laboratory

| 22CS511-Advanced Aptitude and Coding Skills - I | |
|---|---|
| **COs** | **Course Outcome: The students, after the completion of the course, are expected to ….** |
| **CO1** | Develop vocabulary for effective communication and reading skills. |
| **CO2** | Build the logical reasoning and quantitative skills. |
| **CO3** | Develop error correction and debugging skills in programming. |

## 22CE511-Internship

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| **CO1** | Bridge the gap between Industrial requirements and academic learning. |
| **CO2** | Apply acquired knowledge to real-time applications. |
| **CO3** | Carryout multi-disciplinary projects under the guidance of industry and academic supervision. |
| **CO4** | Extend the knowledge through research and development in specialized areas. |
| **CO5** | Identify the complexities involved in solving real-world engineering problems in an industrial setting. |
| **CO6** | Demonstrate teamwork and industrial work ethics, and report the activities carried out during the internship. |

## Seventh Semester B.E.

| 20CE701- Estimation, Costing and Valuation Engineering | |
|---|---|
| **COs** | **Course Outcome: The students, after the completion of the course, are expected to ….** |
| **CO1** | Estimate the quantities for buildings, roads, septic tank, soak pit, retaining walls and culverts. |
| **CO2** | Outline the standard data and schedule of rates for labour and materials |
| **CO3** | Analyse the rate and cost estimate for buildings, canals, and roads as per the schedule of rates. |
| **CO4** | Prepare technical report, tender and contract documents for various work with detailed specifications. |
| **CO5** | Explain bidding procedures, types of contracts, arbitration and legal requirements in construction. |
| **CO6** | Perform valuation of property and calculate rent, mortgage and lease of land and buildings. |

| 20CE912- Prefabricated Structures (Professional Elective) | |
|---|---|
| **COs** | **Course Outcome: The students, after the completion of the course, are expected to ….** |
| **CO1** | Recall the various technologies used in fabrication and erection |
| **CO2** | Illustrate the behaviour of various components of prefabricated structure |
| **CO3** | Identify the various design loads to be considered in the design of elements |
| **CO4** | Calculate the centre of mass, centre of stiffness and lateral force distribution in a structure, |
| **CO5** | Identify suitable connections for different members |
| **CO6** | Propose suitable mechanism to avoid progressive collapse |

| 20ME001- Introduction to Nanotechnology (Open Elective) | |
|---|---|
| **COs** | **Course Outcome: The students, after the completion of the course, are expected to ….** |
| **CO1** | Identify suitable testing technique to inspect any industrial component. |
| **CO2** | Practice the different mechanical testing techniques and know its applications and limitations |
| **CO3** | Practice the different non-destructive testing techniques and know its applications and limitations |
| **CO4** | Practice the different material characterization techniques and know its applications and limitations |
| **CO5** | Practice the different Thermal Testing techniques and know its applications and Limitations |
| **CO6** | Practice the different chemical Testing techniques and know its applications and Limitations |

## Laboratory

**20CE711- Computer Aided Analysis, Design and Drafting Laboratory (CADD)**

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Analyze different beams using STADD Pro. |
| CO2 | Analyze and design steel truss using STADD Pro. |
| CO3 | Analyze and design frames using STADD Pro. |
| CO4 | Draw the structural detailing of RCC Cantilever type Retaining wall. |
| CO5 | Draw the structural detailing of RCC Counterfort type Retaining wall. |
| CO6 | Draw the structural detailing of Circular and Rectangular water tank. |

**20CE712- Data Analysis and Programming Laboratory**

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Identify suitable functions to be used to solve the given problem. |
| CO2 | Apply logical functions to solve real time problems |
| CO3 | Validate the given data using various functions like Sorting, Filtering, etc. |
| CO4 | Summarize large amounts of data using pivot tables and charts. |
| CO5 | Create reports using mail merge option. |
| CO6 | Develop worksheets using macros and VBA. |

**20CE713- Summer Internship**

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Bridge the gap between Industrial requirements and academic learning. |
| CO2 | Apply acquired knowledge to real-time applications. |
| CO3 | Carryout multi-disciplinary projects under the guidance of industry and academic supervision. |
| CO4 | Extend the knowledge through research and development in specialized areas. |
| CO5 | Identify the complexities involved in solving real-world engineering problems in an industrial setting. |
| CO6 | Demonstrate teamwork and industrial work ethics, and report the activities carried out during the internship. |

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**(An Autonomous Institution)**

**RSM Nagar, Kavaraipettai – 601 206**

**Department of Civil Engineering**

**Course Outcomes - Even Semester 2024-25**

| Sl. No. | Semester | Theory / Practical | Course Code / Course Name |
|---|---|---|---|
| 1 | 4 | Theory | 22MA403-Statistics and Boundary Value Problems |
| 2 | 4 | Theory | 22CE401- Advanced Mechanics of Materials |
| 3 | 4 | Theory | 22CE402- Applied Hydraulic Engineering (Lab Integrated) |
| 4 | 4 | Theory | 22CE403- Soil Mechanics (Lab Integrated) |
| 5 | 4 | Theory | 22GE301- Universal Human Values 2: Understanding Harmony |
| 6 | 4 | EEC | 22ME411-Product Development Lab-4 |
| 7 | 4 | EEC | 22CS411-Aptitude and Coding Skills II |
| 8 | 6 | Theory | 22CE601-Design of Steel Structures |
| 9 | 6 | Theory | 22CE602-Environmental Engineering (Lab Integrated) |
| 10 | 6 | Theory | 22CE934-Railways, Metros, Airports and Seaports |
| 11 | 6 | Theory | 22CE941-Maintenance, Repair and Rehabilitation of Structures |
| 12 | 6 | Theory | 22ME917-Principles of Management |
| 13 | 6 | Theory | 22ME001- Introduction to Nanotechnology (Open Elective I) |
| 14 | 6 | Practical | 22CE611- Building Information Modeling laboratory-I |
| 15 | 6 | EEC | 22CS611-Advcanced Aptitude and Coding Skills - II |
| 16 | 8 | Practical | 20CE811R-Project Work |

## Fourth Semester B.E.

### 22MA403 - Statistics and Boundary Value Problems

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Apply the concept of testing the hypothesis. |
| CO2 | Implement the concept of analysis of variance for various experimental designs. |
| CO3 | Demonstrate the control charts for variables and attributes. |
| CO4 | Solve the initial value problems using numerical techniques. |
| CO5 | Determine the numerical solutions of boundary value problems. |

### 22CE401- Advanced Mechanics of Materials

| Cos | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Determine the strain energy and deflection of beams, frames and trusses using energy principles. |
| CO2 | Analyze propped cantilever, fixed beams and continuous beams and draw shear force and bending moment diagrams. |
| CO3 | Determine the load carrying capacity of long and short columns and stresses in thin cylinders, thick cylinders and spherical shells. |
| CO4 | Determine principal stresses and principal planes in three-dimensional state of stress. |
| CO5 | Apply various failure theories to determine the critical stress which governs the design. |
| CO6 | Analyze the stresses due to unsymmetrical bending of beams and the stresses in curved beams. |

### 22CE402- Applied Hydraulic Engineering (Lab Integrated)

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Identify different regimes of flow, analysis of uniform flow in steady state conditions with specific energy concept and its application. |
| CO2 | Identify the most economical section for flow in different channel sections. |
| CO3 | Analyse steady and gradually varied flow, water surface profiles and its length calculation using direct and standard step methods. |
| CO4 | Differentiate the types of hydraulic jumps and estimating energy loss in hydraulic jump with exposure to positive and negative surges. |
| CO5 | Differentiate pumps and explain the working principle with characteristic curves. |
| CO6 | Design turbines and explain the working principle with characteristic curves. |

## 2CE403- Soil Mechanics (Lab Integrated)

| Cos | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Characterize and Classify soils. |
| CO2 | Interpret the role of water in soil behaviour and evaluation of geostatic stresses, permeability and quantity of seepage. |
| CO3 | Determine the geostatic stresses and the stress distribution in a soil medium due to applied loads. |
| CO4 | Explain the stress distribution under applied loads. |
| CO5 | Analyze and compute the consolidation settlements. |
| CO6 | Identify the shear strength parameters for field conditions. |

## 22GE301- Universal Human Values 2: Understanding Harmony

| Cos | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | would become more aware of themselves, and their surroundings (family, society, nature) |
| CO2 | would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind. |
| CO3 | would have better critical ability. |
| CO4 | Would become sensitive to their commitment towards what they have understood (human values, human relationship and human society). |
| CO5 | would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction. |

## 22MCE411-Product Development Lab-4

| Cos | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Identify the real-time problems through literature. |
| CO2 | Develop feasible solutions for the problems. |
| CO3 | Evaluate the methods to develop solutions to the problem. |
| CO4 | Analyze the business opportunities for a new product. |
| CO5 | Prepare a detailed report for the experimental dissemination. |

## 22CS411-Aptitude and Coding Skills II

| Cos | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Develop advanced vocabulary for effective communication and reading skills. |
| CO2 | Build an enhanced level of logical reasoning and quantitative skills. |
| CO3 | Develop error correction and debugging skills in programming. |
| CO4 | Apply data structures and algorithms in problem solving. |

## Sixth Semester B.E.

### 22CE601-Design of Steel Structures

| Cos | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Explain the properties of steel sections and apply the limit state method to the design of steel structures. |
| CO2 | Comprehend the specifications provided by Indian standards to proficiently design structural elements. |
| CO3 | Evaluate the efficiency and performance of bolted and welded connections used in steel structures and design the same. |
| CO4 | Design tension members, compression members and flexural members, demonstrating the ability to develop optimal structural solutions. |
| CO5 | Synthesize the design of purlins and plate girders to ensure structural safety and stability. |
| CO6 | Communicate effectively through technical reports and presentations, as an individual or as a team imbibing ethical principles. |

### 22CE602-Environmental Engineering (Lab Integrated)

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Apply the principles of mathematics and engineering fundamentals to analyze water supply and sewage treatment systems. |
| CO2 | Determine and forecast water demand and population growth using statistical methods, and evaluate water sources for quality compliance. |
| CO3 | Design and optimize municipal water purification processes to meet public health standards. |
| CO4 | Plan and construct sewerage systems by studying the properties of sewage and predicting the flow of sanitary sewage and storm runoff. |
| CO5 | Evaluate and implement advanced methods for sludge treatment and disposal including industrial wastewater management. |
| CO6 | Demonstrate strong communication skills, project management process, and a dedication to moral behavior. |

**22CE934-Railways, Metros, Airports and Seaports (Professional Elective IV)**

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Infer the elements of the permanent way in railway planning and implications in track design and construction. |
| CO2 | Evaluate railway signaling systems and their role in ensuring safe and efficient train operations |
| CO3 | Assess the design and functionality of turnouts, railway stations and yards |
| CO4 | Design elements of mass rapid transit systems to develop sustainable and integrated urban transportation solutions |
| CO5 | Design the runways, taxiways, and navigational aids to support the operations of airports meeting international standards |
| CO6 | Interpret the design considerations, operations, and components of various marine structures adhering to environmental regulations. |

**22CE941-Maintenance, Repair and Rehabilitation of Structures (Professional Elective V)**

| COs | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Apply basic engineering principles and advanced knowledge in maintenance, repair, and rehabilitation techniques. |
| CO2 | Assess distressed structures using appropriate maintenance, inspection and assessment methods. |
| CO3 | Discuss the effects of climate and temperature on the strength and durability properties of concrete. |
| CO4 | Describe different types of special concrete and its properties. |
| CO5 | Identify the repair, rehabilitation, retrofitting and protection methods for different structures. |
| CO6 | Choose various methods of demolition techniques through case studies. |

**22ME001- Introduction to Nanotechnology (Open Elective I)**

| Cos | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Identify suitable testing technique to inspect any industrial component. |
| CO2 | Practice the different mechanical testing techniques and know its applications and limitations |
| CO3 | Practice the different non-destructive testing techniques and know its applications and limitations |
| CO4 | Practice the different material characterization techniques and know its applications and limitations |
| CO5 | Practice the different Thermal Testing techniques and know its applications and Limitations |
| CO6 | Practice the different chemical Testing techniques and know its applications and Limitations |

## Laboratory

### 22CE611-Building Information Modeling Drawing-I

| Cos | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Apply Revit commands to create architectural drafts |
| CO2 | Demonstrate proficiency in creating, modifying, annotating building components and assigning properties using Revit. |
| CO3 | Modify materials, sections and views for the customer needs. |
| CO4 | Incorporate sustainability for engineering problems related to construction. |
| CO5 | Apply construction management skills as a member of a multi-disciplinary team. |
| CO6 | Create written communications appropriate to the construction discipline. |

### 22CS611-Advanced Aptitude and Coding Skills II

| Cos | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Develop advanced vocabulary for effective communication and reading skills. |
| CO2 | Build an enhanced level of logical reasoning and quantitative skills. |
| CO3 | Develop error correction and debugging skills in programming. |
| CO4 | Apply data structures and algorithms in problem solving. |

## Eight Semester B.E.

### 20CE811-Project Work

| Cos | Course Outcome: The students, after the completion of the course, are expected to …. |
|---|---|
| CO1 | Develop sustainable projects understanding the societal and environmental importance. |
| CO2 | Identify appropriate techniques and apply fundamental engineering knowledge to solve the identified problem. |
| CO3 | Carry out inter disciplinary projects using modern techniques and tools. |
| CO4 | Work as an individual or as a team in the development of technical projects, applying ethical principles. |
| CO5 | Comprehend and write reports effectively on the project related activities and findings. |
| CO6 | Bridge the gap between industry and academia by carrying out industrial projects |